

Work Order ID 160465

Friday, April 28, 2017 9:52:27 AM

160465

U/R

Page 1

Item ID: D4766-041

Accept

N900040100

Setup Start *NS1*

Revision ID: URF 17-547

Stop *NS2*

Item Name: Skidtube Assembly

Start Date: 5/5/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 5/16/2017 Req'd Qty: 1.00

1

Customer:

Reference: SCHEDULED/C AOG

Approvals: Process Plan:

Date: APR 28 2017

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D4766

D UR

OK 9/17/4/28

120

0.00

120

Skidtubes

Skidtubes

Skidtubes

Memo

1.01

1- Cut Aft end as per dwg D4766

2- Deburr ends

3-Drill Aft & Fwd Cap holes using DT8678 & DT8901 ****DO NOT OPEN AFT CAP HOLES***

4- Locate DT Pilot Drill all X-Bolt holes using #30" drill. & Drill Ground wire hole on top of Tube.

5- Open ground wire hole .297" section D-D (1) place and detail "I" (2) place.

6- Open Aft & Fwd Cap holes using 0.208" drill.

7- Deburr holes.

1 8 BIK 17-05-10

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																						
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Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																	
Root Cause		FAULT CATEGORY																							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐		Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐		Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐		Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐																	
		OTHER : ☐																							

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Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 5/5/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/16/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference: SCHEDULED/C AOG

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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140	QC5- Inspect part completeness to step on W/O	0.00							
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140

QC

Quality Control

Memo

0.02

DAS
03
9-89

DP 17-5-10

150	Chemical Conversion Coat per QSI005 4.1	0.00							
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150

HandFinish

Hand Finishing

Memo

0.71

X1 20170510
BETB

160	QC7-Inspect Chemical Conversion Coat	0.00							
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160

QC

Quality Control

Memo

0.01

1 17-05-10

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Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																											
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Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER : 	
Misidentified ☐	Past Due ☐																																																														

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Required Date: 5/16/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference: SCHEDULED/C AOG

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Skidtubes	0.00							
170	Skidtubes	1.71				1	0	17-05-10	BB
Skidtubes	Memo 1- Open 7th x-bolt holes from FWD to 0.750". ****FOR WEB ALIGNMENT PURPOSES ONLY**** DWG D4766 SHEET 4 DETAIL K. 2- Bond web as per Dwg D4766 & QSI 015 A/R 241 Sike Flex Batch: <u>M137127</u> Exp Date: <u>6-DEC-2017</u> start time: _____ end time: _____ ***NOTE, 35.877" FROM AFT END AS PER DWG D4766. SHEET 5								

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval	
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐				
		☐ OTHER : _____							

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Page 4

N900040100

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Setup Start *NS1*
Stop *NS2*
```

Start Date:	5/5/2017	Start Qty:	1.00	*1*
Required Date:	5/16/2017	Req'd Qty:	1.00	*1*
Reference:	SCHEDULED/C AOG			

Cust Item ID:
Customer:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run	Start	*NR1*
	Stop	*NR2*

Sequence ID/
Work Center ID

Operation Description

Set Up/ Run Hours

Tool ID**Tool #****Plan
Code**

**Accept
Qty**

Reject
Qty

Reject Number

**Insp.
Stamp**

180

QC5- Inspect part completeness to step on W/O

0.00

180

QC

Memo

0.02

Quality Control

GR
17-05-11

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
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								Lead hand / Supervisor Approval Verification	
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Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐				
								OTHER :	

Work Order ID 160465

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Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 5/5/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/16/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference: SCHEDULED/C AOG

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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185

185

Skidtubes

Skidtubes

Memo

1.12

1- Bend aft tube as per dwg VERIFY HEIGHT and record: 8.625"

2- Remove bending mark and mark center line on end of tube

3- Drill AFT float holes using DT _____ A,B,C.

4- Open X-Bolt holes to size as per Dwg D4766 and detail K

5- Drill Rivet Holes as per Dwg D4766 Using DT10065

6- Deburr Rivet holes & 0.750" holes and touch up alodine rivet holes only.

7- Seal all faying surfaces using proseal and rivet Doubler as per Dwg D4766.

A/R Proseal Batch: 13695312H CURE TIME START TIME: 2:43 PM

NOTE: SHAVE RIVET AFTER 12HRS CURE TIME.

8- Ream holes to finish size and Swage x-bolt spacers as per Dwg D4766 and section C-C

9- Trim/Grind flush per QSI 002

10- Swage x-bolt spacer as per dwg D4766 section G-G. Trim and grind flush.
Open thru holes 0.625".

11- Deburr and blow out chips from inside of tube.

17-05-12

17-05-13

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coor. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
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Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	OTHER : ☐			

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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188	QC5- Inspect part completeness to step on W/O	0.00				1			DAS 38 9-89
188									
QC	Memo	0.02							
Quality Control									MAY 16 2017

210	Pressure Wash per QSI005 4.3	0.00							
210									
HandFinish	Memo	0.72							
Hand Finishing	Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.								

220		0.00							
220									
SprayPaint	Memo	2.00							
Spray Painting	1- Apply Primer as per QSI005 4.2.1.3.3 and dwg A/R Primer Batch: <u>136772</u>								
	2- Paint White as per QSI005 4.2.2.4 and dwg A/R Paint Batch: <u>136994</u>								

(x1) 2017/05/16
 BEB

17/05/16
1000

DQA: _____ Date: _____



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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	QC14- Inspect Spray Paint	0.00							
230									
QC	Memo	0.01							
Quality Control									
260		0.00							
260	HandFinishing								
HandFinish	Memo	1.41							
Hand Finishing	1- Install Ground Wire inserts as per Dwg D4766.								
	2-Inspect for Foreign objects								
	3- Install Fwd & Aft caps as per Dwg D4766 and Detail "A" & "B". Fastener must be install wet as per note (9).								
	A/R 241 Sika Flex Batch: <u>M137127</u>								
	Exp Date: <u>12/16</u>								
	4- Wing Walk as per Dwg D4766 and QSI 005 4.4								
	Batch: <u>M137127</u>								

***PTD install DSI 9775 ProSeal890**
B136953
DP 17-5-17
17-10-30

DAS 15 9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

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Work Order: <u>160465</u> Part No. <u>D4766-041</u> NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☒ Quality ☐ Other ☐					
Date: <u>17/4/28</u>		Step #: <u>265</u>		QTY Effective: _____			MRB (QSI042) Approval <u>DAS 12 17/4/28</u> <u>9-89</u>		
Description Work Order Deviation <u>After Finish, install DSI 9775-011</u>				Disposition <u>Install per DSI 9775:</u> <u>✓ DSI 9775-011 B.N.:</u> <u>CR3524-5-3 x 80</u> <u>M137508 - (20)</u> <u>DSS14-1 x 2</u> <u>M137479 - (60)</u> <u>DSS17-1 x 2</u> <u>> see B.O.M.</u>				Completed By <u>17-5-17</u>	
				Lead hand / Supervisor Approval Verification <u>DAS 9 17-05-18</u> <u>9-89</u>					
				QC / QA Coordinator Approval <u>DAS 9 17-05-18</u> <u>9-89</u>					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER: _____							

Work Order ID 160465

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160465

Page 8

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 5/5/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 5/16/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference: SCHEDULED/C AOG

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	QC5- Inspect part completeness to step on W/O	0.00				1			DAS 38 9-89
270									
QC	Memo	0.02							
Quality Control									MAY 19 2017
300	Identify as per dwg & Stock Location: _____	0.00				1			DAS 28 9-89
300	Packaging								
Packaging	Memo	0.01							MAY 19 2017
Packaging	PPP 160462								
310	QC21- Final Inspection - Work Order Release	0.00							
310									
QC	Memo	0.10							
Quality Control									17/5/23 JH

MAY 19 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER : _____							

Picklist Print

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Page 1

Work Order ID: 160465

160465

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 5/5/2017

Required Date: 5/16/2017

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 13.04.17 NEW ISSUE DD VERF:JLM IPP REV:B
13.08.08 PB2 DD VERF:JLM IPP REV:B 13.08.26
PB3 DD VERF:JLM IPP REV:C 13.11.14 AS PER
DWG REV.B DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG
REV.C DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.D
DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN526C1032R10		Purchased	No			260	Each	39.0000	2	2			
AN526C1032R10									**			all 17/05/17	
Screw													
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				ST326				39					
				m135133				39		x2			
D2965-3		Manufactured	No			260	Each	72.0000	1	1			
D2965-3									**			all 17/05/17	
Cap													
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				FP001				72					
				126369				72		x1			
D2973		Manufactured	No			260	Each	32.0000	2	2			
D2973									**				
Cross Bolt Spacer													
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				LG001				32					
				144627				32					
D4766-041-BENT		Manufactured	No			120	Each	0.0000	1	1			
D4766-041-BENT									**			all 17-05-09	
Extrusion Bent													

N/A
17-05-19

NOT
Picked.

B146293

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																																																										
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																									
Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐																																																																

Picklist Print

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Page 2

Work Order ID: 160465

Parent Item: D4766-041

Parent Item Name: Skidtube Assembly

160465

D4766-041

Start Date: 5/5/2017

Required Date: 5/16/2017

Start Qty: 1.00

Required Qty: 1.00

D5085-1 Manufactured No

170 Each 8.0000 1 1

D5085-1

Web

BLT-05-10

Location

Loc Qty

Loc Code

LG002

8

30107

2

146172

6

D5304-1 Manufactured No

260 Each 15.0000 2 2

D5304-1

Crossbolt Spacer

TW 1705-15

Location

Loc Qty

Loc Code

LG001

15

145050

5

146516

10

NAS1149C0332R Purchased No

260 Each 4,636.000 5 5

NAS1149C0332R

WASHER

ll 12105/17

Location

Loc Qty

Loc Code

FP001

464

m136741

46

m137178

418

GA

526

m133284

26

m136444

500

ST260a

3200

m135408

0

m135908

200

m136741

0

m137381

3000

ST266

446

m136643

446

M137381

K5

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																																																										
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																									
Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐																																																																

Picklist Print

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Page 3

Work Order ID: 160465

160465

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 5/5/2017

Required Date: 5/16/2017

Start Qty: 1.00

Required Qty: 1.00

D4686-1 Manufactured No 260 Each 102.0000 11 11

D4686-1

Spacer

TW 17-05-13

Location

Loc Qty

Loc Code

LG001

102

145075

82

146515

20

(11)

D4753-1 Manufactured No 260 Each 83.0000 22 22

D4753-1

Doubler

TW 17-05-12

Location

Loc Qty

Loc Code

LG001

80

145076

8

153498

72

LG002

3

128887

(3)

(8) (11) (3)

AEIS-1032-130 AEIS8-1032-130 Purchased No 260 Each 0.0000 3 3

AFI S-1032-130

Rivnut

(x3) all 4/05/17

x A464-1032-130 / M136574

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER :							

Picklist Print

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Page 4

Work Order ID: 160465

160465

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 5/5/2017

Required Date: 5/16/2017

Start Qty: 1.00

Required Qty: 1.00

AN3C4A Purchased No

260 Each

1,135.000 3 3

AN3C4A

Bolt

all 17/05/17

Location

Loc Qty

Loc Code

FG	20	
122814	20	
FP001	277	
M136450	23	
M136740	8	
M136986	20	
<u>M137075</u>	224	<i>X3</i>
M137164	2	
OVER002	700	
M137361	700	
ST350	138	
M135704	138	

MS20601-AD4W3 Purchased No

260 Each

255.0000 44

MS20601-AD4W3

Rivet

44

JW 17-05-12

Location

Loc Qty

Loc Code

LG001	105	
<u>m136182</u>	56	
<u>m137075</u>	49	<i>368</i>
ST308	150	
m137361	150	

D2965 Manufactured No

260 Each

39.0000 1 1

D2965

Cap

all 17/05/17

Location

Loc Qty

Loc Code

FP001	39	
<u>127852</u>	39	<i>X1</i>

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Shop Packet Print

Page 4

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step # : _____		QTY Effective : _____			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐				
OTHER : _____									

Picklist Print

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Page 5

Work Order ID: 160465

160465

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 5/5/2017

Required Date: 5/16/2017

Start Qty: 1.00

Required Qty: 1.00

AN3C5A

Purchased

No

260

Each

1,212.000

2

2

AN3C5A

Bolt

**

all 170516

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

168

M136450

2

M136579

66

M137164

100

OVER002

900

M136182

100

M137361

800

ST350

139

M134676

1

M135442

138

x 2

CR3524-5-3 X 80⁺⁸ B: M137508 > DD 17-5-17

D5514-1 X 2 B: 160446

D5517-1 X 2 B: 160447

DQA: _____ Date: _____



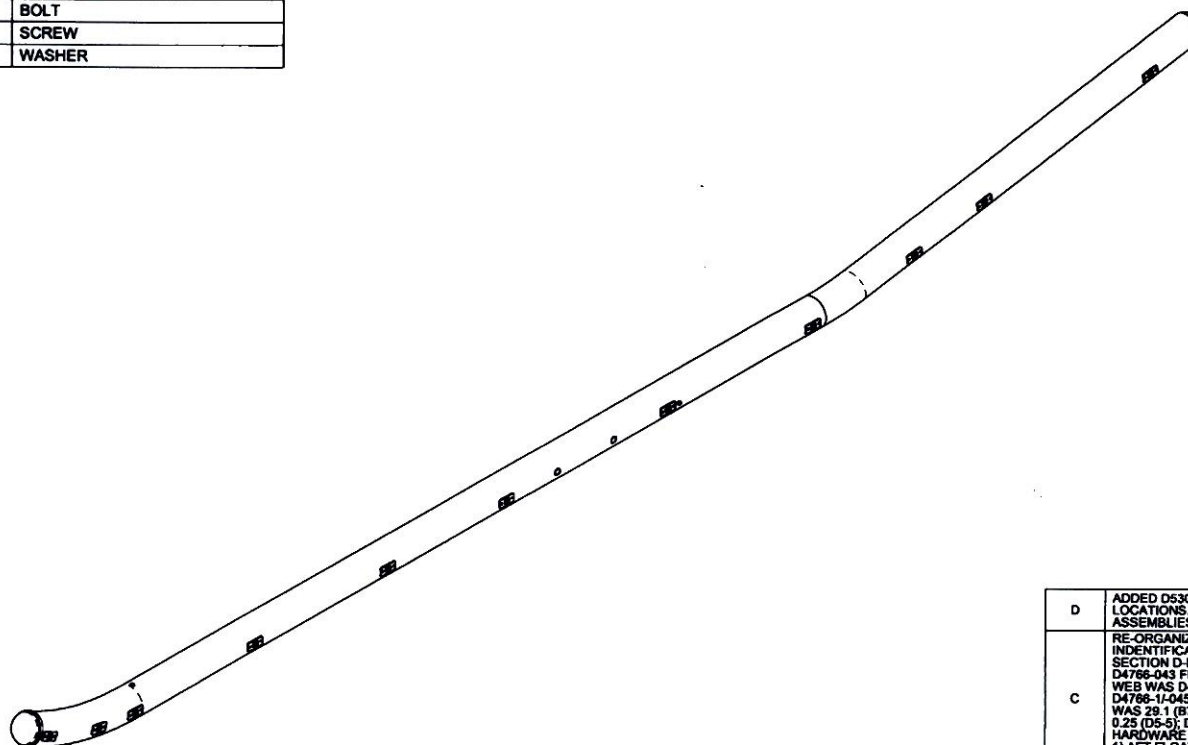
WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER : ☐							

ITEM	QTY	P/N	DESCRIPTION
	X	D4766-041	SKIDTUBE
1	1	D2965	CAP
2	1	D2965-3	CAP
3	1	D4766-043	SKIDTUBE SUB ASSY
4	2	AN3C5A	BOLT
5	2	AN526C1032R10	SCREW
6	2	NAS1149C0332R	WASHER



D4766-041 SKIDTUBE

UNDER REVIEW

URF 17-547 ML

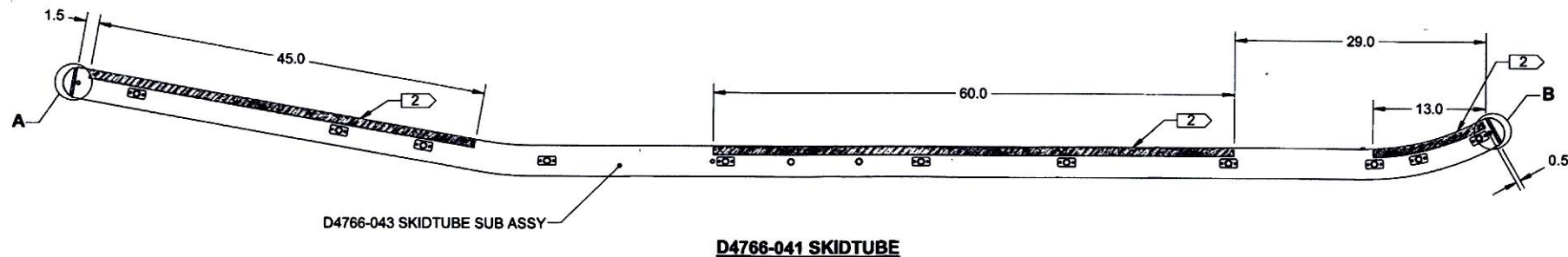
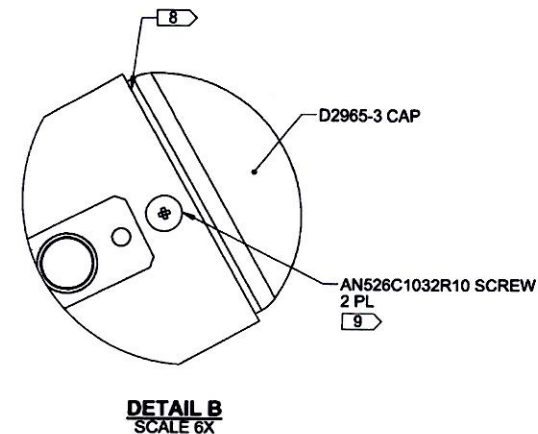
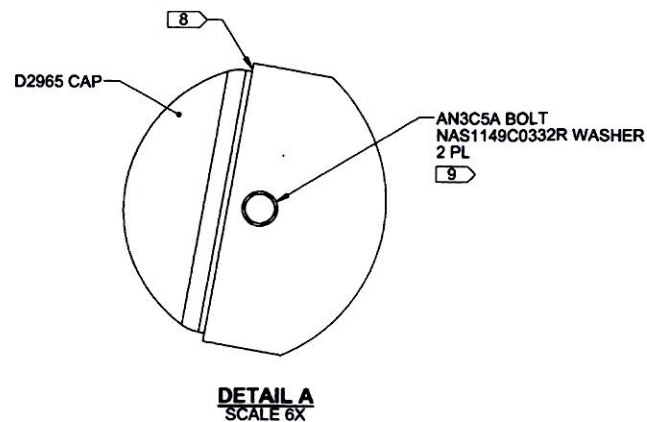
RELEASED
2016-02-04
EOW 16-514

APPROVED

D	ADDED D5304-1 SWAGED CROSSBOLT SPACER FOR GHL LOCATIONS. ADDED SHT 1. REMOVED D3492-055 PLUG ASSEMBLIES. RE-ORDER SECTIONS	AP	15.11.02
C	RE-ORGANIZED SECTIONAL/DETAIL VIEWS ALL SHTS; IDENTIFICATION MOVED FROM SHT 1 TO SHT 5; SECTION D-D AND DETAIL K 11PL WAS 12PL; MODIFIED D4766-043 FINISH; Ø0.750 WAS Ø0.758 (B4-3); D5085-1 WEB WAS D4766-1; VARIOUS MINOR DIM CHANGES TO D4766-1-045 TO MATCH STD SKIDTUBE PROFILE; 35.9 WAS 23.1 (B7-4); GROUNDING FASTENER MOVED AFT 0.25 (D5-5); D2965 HARDWARE AND GROUNDING HARDWARE CHANGED TO STAINLESS; ADD NOTE 9 (SHT 1) AFT FLOAT HOLES NOW DIMENSIONED AFTER AFT BEND	AP	15.02.25
B	FWD CAP WAS D2965 NOW D2965-3. D3492-055 WAS D3492-051. SWAGING NOW 0.850 WAS 0.861 (C7-2). ADDED BENDING DETAIL TO SHEET 4. MATERIAL D2962-180 WAS D2962-185 (A7-5). ADDED DETAIL L ON SHT 3. ADDED TOP VIEW ON SHT 5. REPLACED D4766-1 WITH D4927-041 ON SHT 3. GROUND HANDLING THRU HOLES SPACERS NOW WELDED, SEE SECTION H-H (B4-2). RE-ORDERED SECTIONS AND DETAILS.	AP	13.08.08
A	NEW ISSUE	AP	13.02.13
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DESIGN	AP	DART AEROSPACE USA, INC. EUGENE, OR	
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MFG. APPR.	DD	D4766	SHEET 1 OF 6
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APR 28 2017



NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 32.87 lbs
- 8) SEAL MATING SURFACES WITH SIKAFLEX -241/-291 OR PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-291 OR PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT

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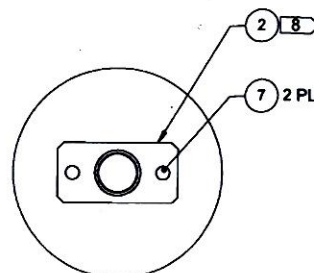
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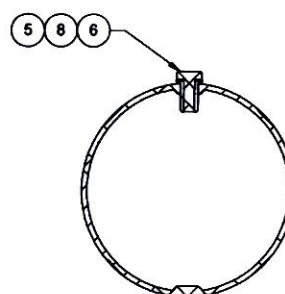
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ITEM	QTY	P/N	DESCRIPTION
	X	D4766-043	SKIDTUBE SUB ASSY
1	11	D4686-1	SPACER
2	22	D4753-1	DOUBLER
3	1	D4766-045	SKIDTUBE SUB ASSY
4	2	D5304-1	CROSSBOLT SPACER
5	3	AELS-1032-130	INSERT
6	3	AN3C4A	BOLT
7	44	MS20601AD4W3	RIVET, BLIND, CSK
8	3	NAS1149C0332R	WASHER

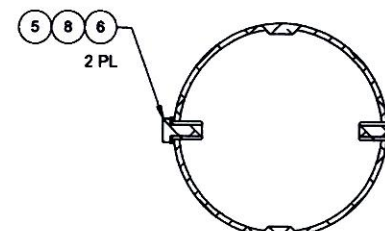
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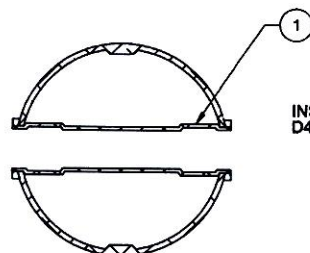
DETAIL E
SCALE 6X
22 PL



SECTION D-D
SCALE 6X



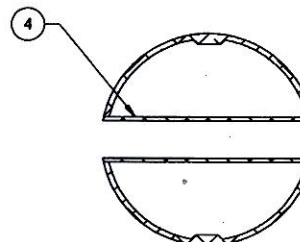
SECTION F-F
SCALE 6X



SECTION C-C
SCALE 6X
11 PL

INSTALL D4686-1 SPACER AFTER INSTALLING
D4753-1 DOUBLERS AS FOLLOWS (11 PL)

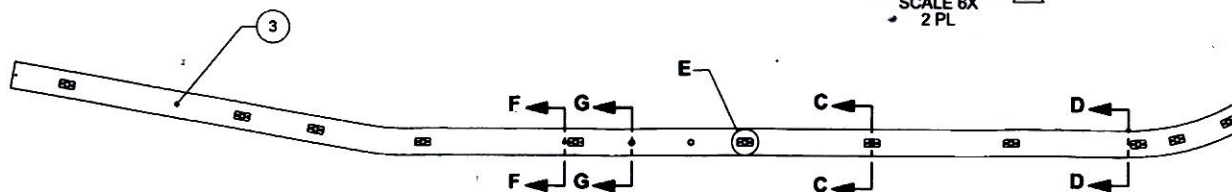
1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 +0.010/-0.000$ X 1.0 DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002



SECTION G-G
SCALE 6X
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.585 +0.005/-0.000$ X 1.0 DP PER QSI 002
3. OPEN THRU HOLE TO $\phi 0.625$



D4766-043 SKIDTUBE SUB ASSY

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME (REF 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 31.69 lbs
- 8) SEAL FAYING SURFACES USING PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT

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2016-02-04

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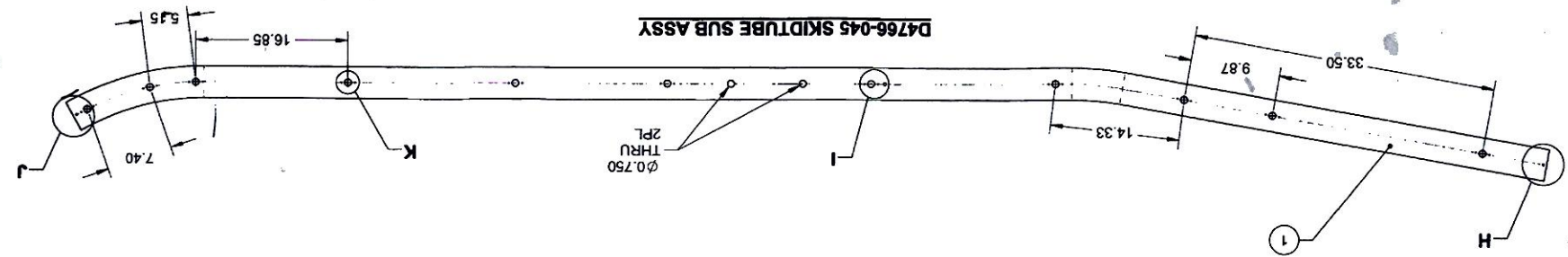
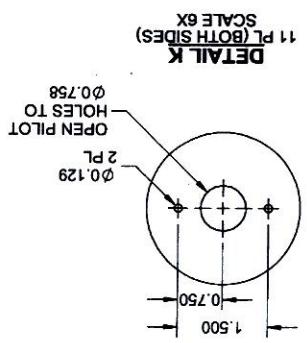
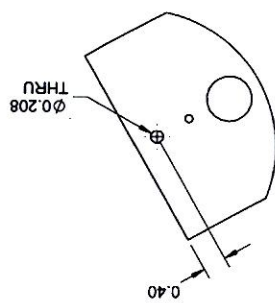
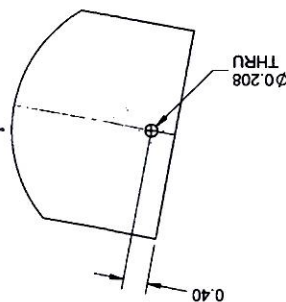
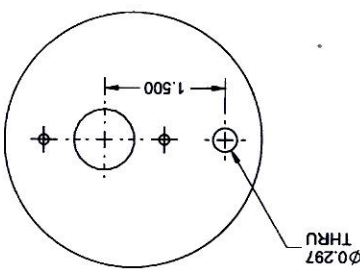
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APPROVED	WM
DE APPR.	DS
DATE	15.11.02

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EUGENE, OR

DRAWING NO. **D4766**
TITLE **SKIDTUBE**
REV. D
SHEET 3 OF 6
SCALE
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ITEM	QTY	P/N	DESCRIPTION
	X	D4766-045	SKIDTUBE SUB ASSY
1	1	D4766-1	SKIDTUBE
2	1	D5085-1	WEB



UNDER REVIEW

URP 17-547 ML

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DATE 15.11.02

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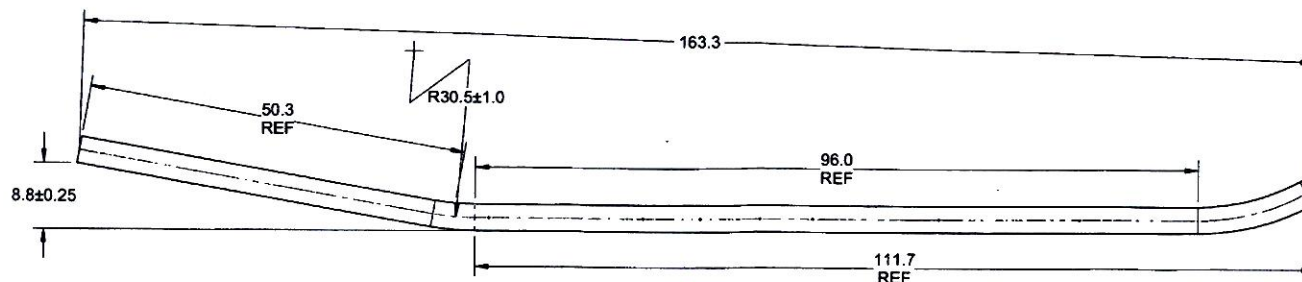
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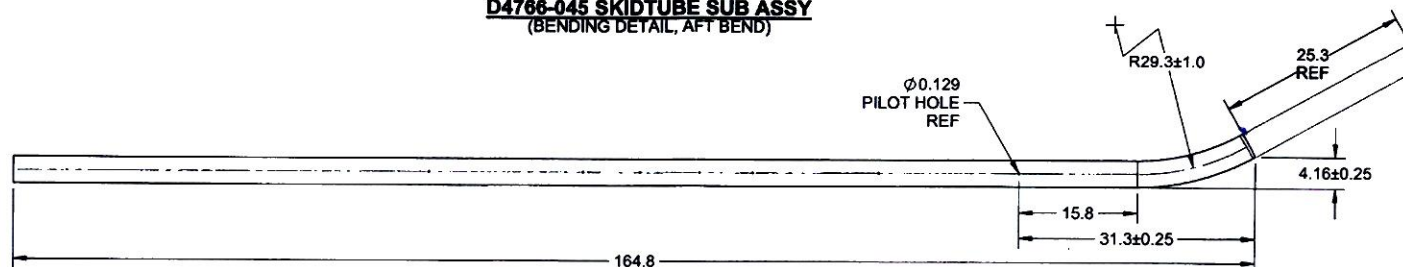
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- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 31.69 lbs

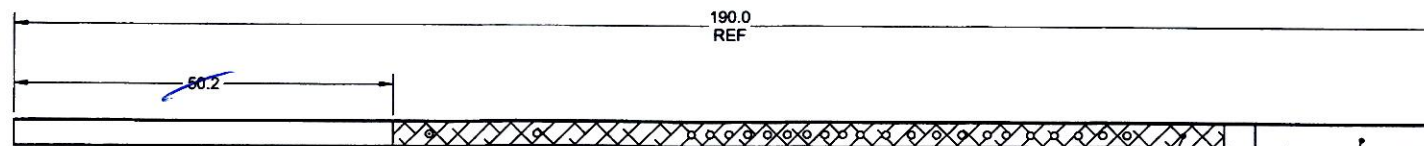
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D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, AFT BEND)



D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, FWD BEND)



D4766-045 SKIDTUBE SUB ASSY
(ASSEMBLY DETAIL)

D5085-1 WEB D4766-1 SKIDTUBE

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: N/A
- 8) INSERT D5085-1 WEB INTO D4766-1 EXTRUSION IN LOCATION SHOWN AND BOND INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/-291 ADHESIVE PER DART QSI 015.

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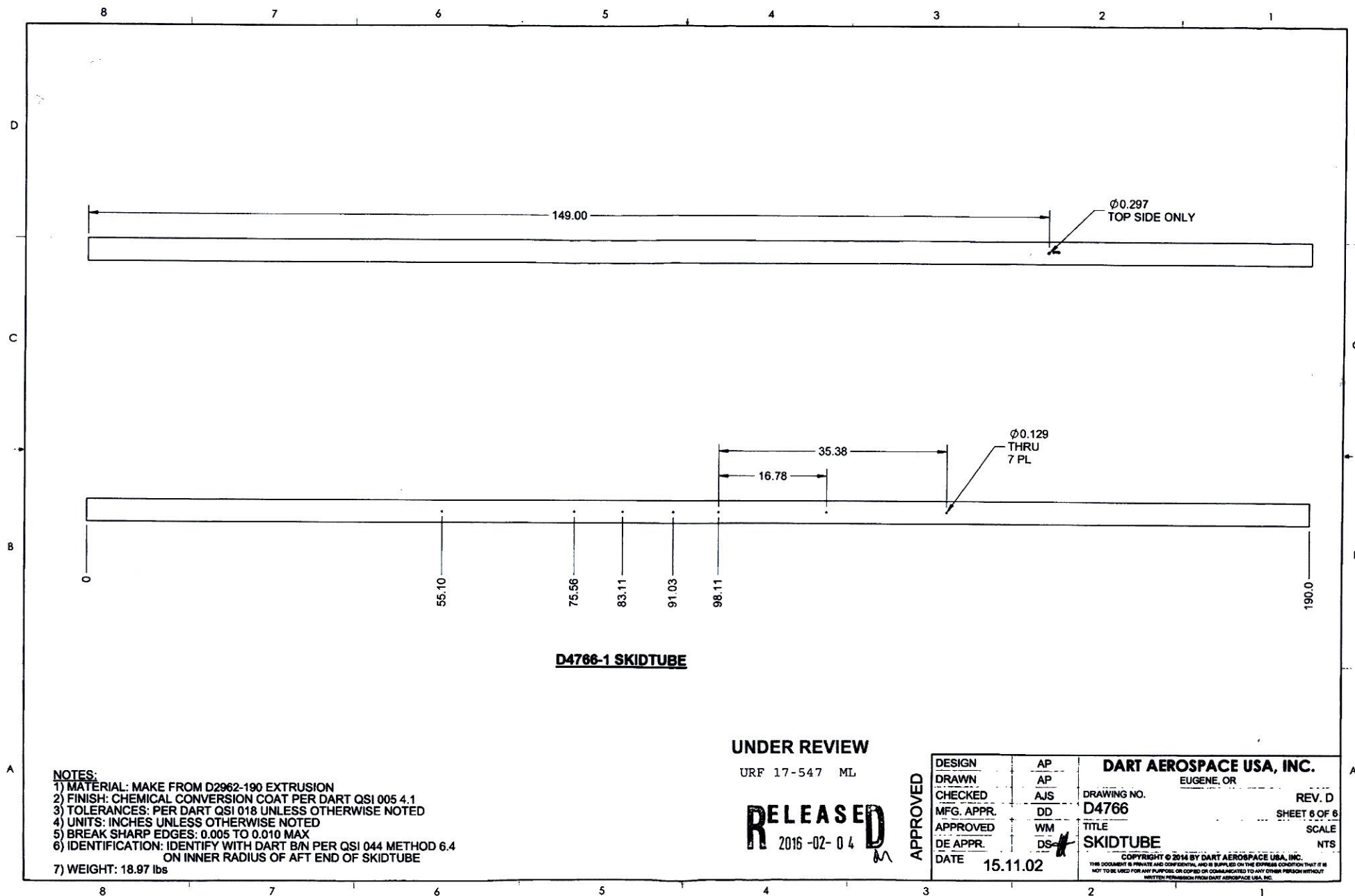
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TITLE **SKIDTUBE** SCALE NTS

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D4766-1 SKIDTUBE

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D4766

REV. D

TITLE

SKIDTUBE

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NOTES:

- 1) MATERIAL: MAKE FROM D2962-190 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART B/N PER QSI 044 METHOD 6.4
ON INNER RADIUS OF AFT END OF SKIDTUBE
- 7) WEIGHT: 18.97 lbs

DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D117-762 REV. E AND EARLIER AND
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D117-762 REV. 4 AND EARLIER

REF. FAA STC: SR01853SE
REF. TCCA: LOA RDIMS-4374899
REF. EASA STC: 10017063
REF. DGAC MEXICO STC: IA-376/2016

1.0 PURPOSE

It has come to Dart's attention that the D117-762-041 and D145-762-045 Skidtubes at CHG 002 and prior, and D145-762-043 Skidtubes at CHG 005 and prior, may experience hole elongation around the ground handling lugs when certain styles of ground handling equipment (particularly the ground handling equipment with wheels positioned aft of the rear ground handling lug) are used to tow the aircraft over rough terrain.

The purpose of this Dart Service Instruction (DSI) is to provide customers with a repair procedure to modify their existing skidtubes to prevent elongation and/or to restore skidtubes with elongated ground handling holes.

Skidtubes that are acceptable candidates for this repair procedure must have a maximum ground handling hole elongation of 1.05" (26.7 mm) once the hole is cleaned up and deburred. Skidtubes that have a ground handling hole elongation greater than 1.05" (26.7 mm) must be removed from service and replaced. Reference Figure 1 of this service instruction.

2.0 INSTALLATION PROCEDURE

NOTE: The skidtube is manufactured with an internal vertical I-beam and great care must be taken not to damage it during installation of the D5514-1 Doublers (hereinafter referred to as doubler(s)).

NOTE: D117-762-045 Float Skidtubes may have been modified to include the installation of hose support brackets. If the location of the hose support brackets interfere with the installation of the doubler it is acceptable to relocate the hose support brackets more forward or more aft on the skidtube. Do not reposition the hose support bracket higher on the skidtube as this will result in damage to the internal I-beam. Plug existing holes with the same part number of rivets that were removed.

NOTE: Mark the location and orientation of each doubler when transfer drilling and ensure that the doublers are positioned in the same manner when fastening the doublers to the skidtube. Use the forward ground handling lug hole (if it is still fully intact and undamaged) to assist with correctly placing the doublers.

- 2.1 To facilitate this modification, remove the skidtube from the aircraft per ICA-D117-762 Chapter 32.1 / 32.7 / 32.9.
- 2.2 Remove and discard both ground handling lugs and associated hardware from the skidtube.
- 2.3 Remove the crossbolt spacers only if they are loose.
- 2.4 Deburr all holes and ensure that the outer surface of the skidtube is uniform and smooth. Do not remove any more material than necessary around the hole.
- 2.5 Ensure that the doubler is properly positioned on the skidtube. Test fit the doubler and D5517-1 Ground Handling Pins (hereinafter referred to as pin(s)). Reference Figure 2 of this service instruction.
- 2.6 Transfer mark Qty (38) holes from each doubler to the skidtube and ensure there is a minimum edge distance of 0.241" (6.1mm) between the edge of the elongated hole and the center of the transfer mark. Reference Figure 3 of this service instruction.
- 2.7 Drill Qty (38) Ø0.161" (#20) holes at each transfer mark location into the skidtube. Deburr all holes.
- 2.8 Touch up all bare aluminum on the skidtube with a chemical conversion coating per MIL-DTL-5541. (Alodine 1201).

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DE APPR.	DS	SKIDTUBE DOUBLER	NTS
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- 2.9 Apply a 0.010" (0.3mm) thick layer of Proseal 890 B1/2 or Proseal 1422 B1/2 to the inner surface of one doubler.
- 2.10 Using cleco clamps, secure the doubler onto one side of the skidtube.
- 2.11 Liberally coat the shoulder on one end of each pin with Proseal 890 B1/2 or Proseal 1422 B1/2 and insert that end through the skidtube into the doubler.
- 2.12 Liberally coat the shoulder on the other end of the pins with Proseal 890 B1/2 or Proseal 1422 B1/2.
- 2.13 Apply a 0.010" (0.3mm) thick layer of Proseal 890 B1/2 or Proseal 1422 B1/2 to the inner surface of the second doubler.
- 2.14 Using cleco clamps, secure the second doubler onto the other side of the skidtube.
- 2.15 Ensure that both doublers are flush against the surface of the skidtube.
- 2.16 Ensure that the doublers and pins remain properly aligned per Figure 2 of this service instruction.
- 2.17 Using CR3524-5-3 Rivets, secure both doublers to the skidtube. Reference Figure 3 of this service instruction
- 2.18 Remove all excess Proseal.
- 2.19 Relocate the float hose support brackets if necessary.
- 2.20 Reinstall the modified skidtube onto the aircraft per ICA-D117-762 Chapter 32.2 / 32.8 / 32.10.
- 2.21 Repeat steps 2.1 thru 2.20 on the other skidtube.
- 2.22 Update the aircraft log book as applicable to indicate installation of the DSI 9775-011 Skidtube Doubler Kit.

3.0 PARTS LIST

The DSI 9775-011 Skidtube Doubler Kit contains the parts required to modify Qty (2) skidtubes.
 *Qty (8) additional rivets are provided with the kit.

Qty -011	Part Number	Description
X	DSI 9775-011	SKIDTUBE DOUBLER
4	D5514-1	DOUBLER
4	D5517-1	GROUND HANDLING PIN
*160	CR3524-5-3	RIVET, COUNTERSUNK

4.0 WEIGHT AND BALANCE

When the DSI 9775-011 Skidtube Doubler Kit is installed on both skidtubes, there is a net weight increase as stated in the following table.

Installation	Weight	LATERAL		LONGITUDINAL	
		Arm	Moment	Arm	Moment
DSI 9775-011 SKIDTUBE DOUBLER KIT	2.2 lb 1.0 kg	0 in 0 m	0 in-lb 0 m-kg	180 in 4.6 m	396 in-lb 4.6 m-kg

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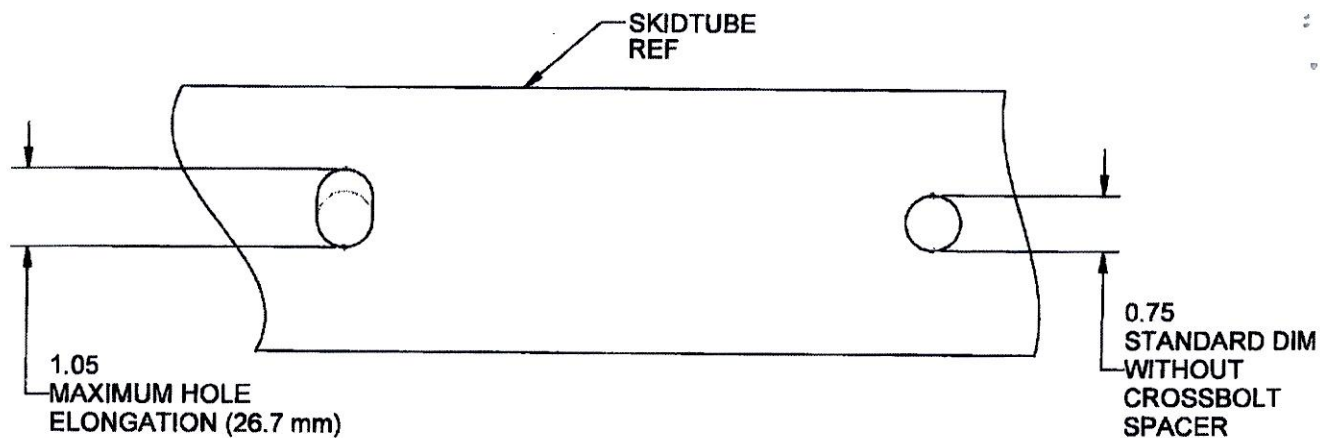


FIGURE 1
HOLE ELONGATION

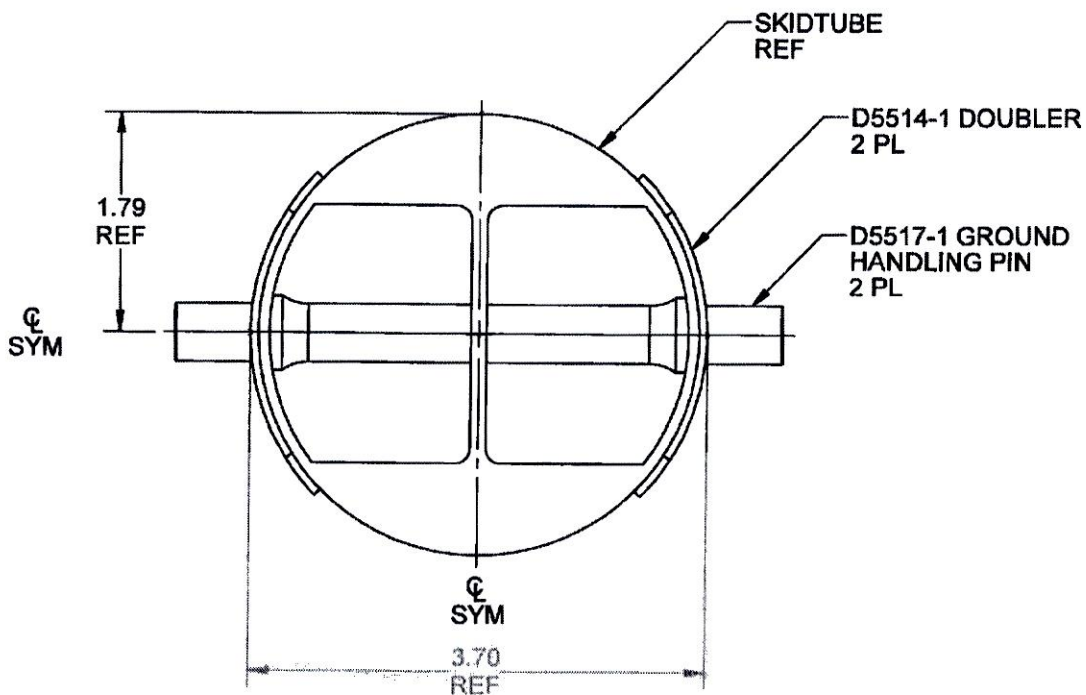


FIGURE 2
DOUBLER INSTALLATION
(SHOWN WITH CROSSBOLT SPACER REMOVED)

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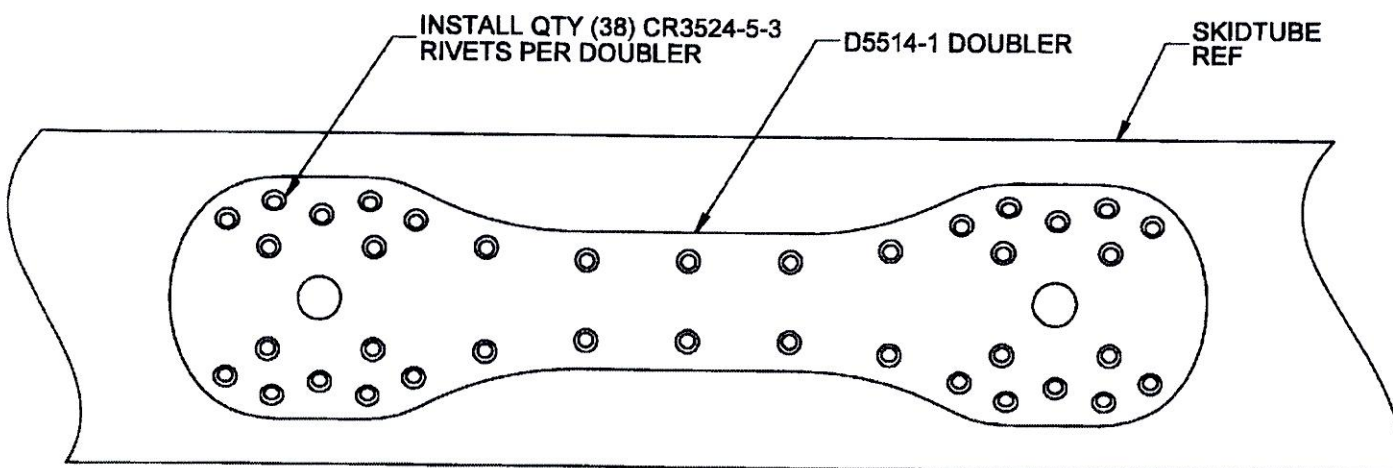
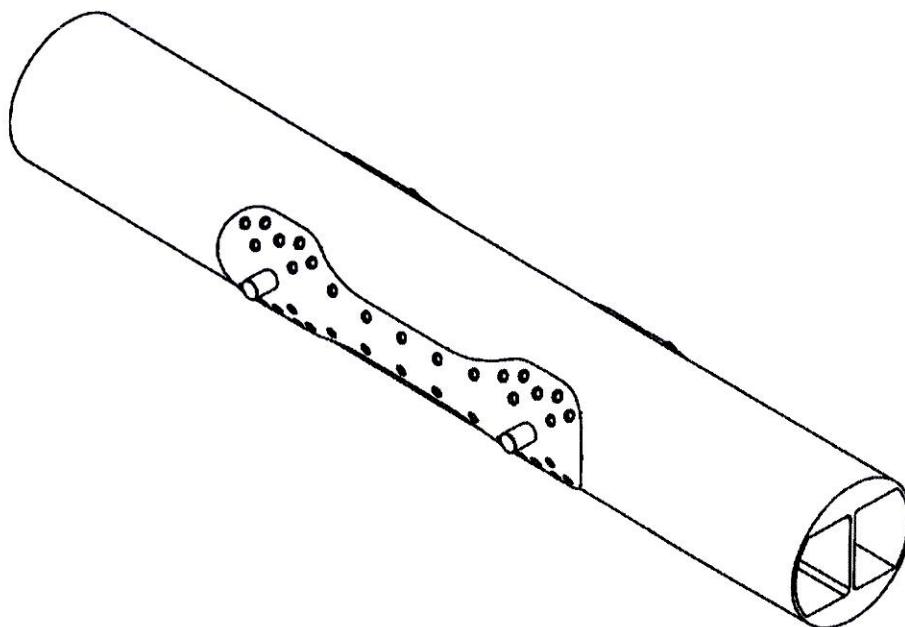


FIGURE 3
RIVET INSTALLATION

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